

REMARKS

This Preliminary Amendment is being filed subsequent to a Request for Continued Examination (RCE) filed on September 29, 2009, and prior to the issuance of a first Office Action following the RCE. Claims 1, 3-6, 9-10, 13-18, 20-21, 24-39, and 42-43 are pending, with claims 32 and 33 previously withdrawn.

At the outset, Applicants thank Examiner Pellegrino for extending the courtesy of a telephone interview to Applicants' undersigned representative on April 15, 2010. During the interview, the claims and the amendments submitted herewith were discussed in light of U.S. Patent No. 6,005,161 of Brekke *et al.* ("Brekke"). No agreement was reached as to whether the amendments submitted herewith distinguish over the cited art.

Applicants respectfully request reconsideration of the present application in view of the above amendments and following remarks.

Amendments to the Claims

Applicants present the following claim amendments solely to expedite prosecution. These amendments should not be construed as Applicants' acceptance of the Examiner's previous rejections. Applicants reserve the right to prosecute any of the former claims in a continuing application.

Claim 1 is amended to recite a wedge-shaped porous tissue scaffold including at least one pocket containing finely minced fragments of viable tissue, the viable tissue comprising naturally occurring cells and their extracellular matrix, and the naturally occurring cells and their extracellular matrix being native to the viable tissue. Claim 13 is similarly amended to recite finely minced fragments of viable tissue disposed within the at least one pocket in the scaffold, the viable tissue comprising naturally occurring cells and their extracellular matrix, and the naturally occurring cells and their extracellular matrix being native to the viable tissue. Claim 24 is amended to recite mincing the viable tissue, with its native naturally occurring cells and extracellular matrix, to form finely minced tissue particles. The remaining language of claim 24 is amended to provide proper

antecedent basis. Claim 34 is similarly amended to recite mincing the viable tissue, with its native naturally occurring cells and extracellular matrix, to form finely minced tissue fragments. The remaining language of claim 34 is amended to provide proper antecedent basis. Dependent claims 25, 45, and 53 are amended to correspond to their independent claims. Support for these amendments can be found throughout the specification, for example at paragraphs [0059], [0061], [0063], and [0065]. No new matter is added.

Patentability of the Claims Over Brekke

Independent claims 1 and 13 each require finely minced fragments of viable tissue, the viable tissue comprising cells and their extracellular matrix, and the cells and their extracellular matrix being native to the viable tissue. Similarly, each of independent method claims 24 and 34 require mincing the viable tissue, with its native naturally occurring cells and extracellular matrix, to form finely minced tissue particles.

Applicants initially note that the recitations of claims 1, 13, 24, and 34 require “finely minced fragments” of “viable tissue.” The plain language of the claims also requires that the “viable tissue” that is finely minced contain “cells and their naturally occurring extracellular matrix,” and that these cells and extracellular matrix be *native* to the viable tissue. Thus, each of the independent claims plainly requires that the tissue that is minced to form the finely minced fragments contain *native* cells and their naturally occurring extracellular matrix. As a result, in order for a prior art reference to anticipate claims 1, 13, 24, and 34, the prior art must teach tissue that contains its native cells and naturally occurring extracellular matrix, and this tissue must be minced into tissue fragments. Any tissue that is minced *without* its native cells and extracellular matrix cannot meet the limitations of claims 1, 13, 24, and 34.

During the aforementioned interview, the Examiner suggested that the language of claims 1 and 13, relating to the finely minced fragments of viable tissue, is a product-by-process limitation. Applicants strongly disagree. A product-by-process claim defines a product in terms of how it is made, rather than in terms of structure. Claims 1 and 13 clearly recite structure. The claims require a material, namely “viable tissue,” and this material must comprise cells and their naturally occurring extracellular matrix. The cells and naturally occurring extracellular matrix must also be native to the viable tissue. The claims also require that this structure (the “viable tissue”) be in the form of “finely

minced fragments.” While a method of making such fragments may require the process of mincing, the claims recite the resulting structure – that the “viable tissue” is in the form of finely minced fragments. Claims 1 and 13 therefore cannot be considered as having product-by-process limitations.

Independent claims 1, 13, 24, and 34 distinguish over Brekke because Brekke does not disclose finely minced fragments of “viable tissue” that are contained within or loaded into a pocket of a scaffold, the “viable tissue” containing cells and their naturally occurring extracellular matrix, and the cells and their naturally occurring extracellular matrix being native to the viable tissue.

First, Brekke fails to disclose minced fragments of a “viable tissue.” The biodegradable graft device of Brekke is composed of a porous, biodegradable polymeric macrostructure containing a chemotactic ground substance. The Examiner asserts that the chemotactic ground substance forms the minced tissue fragments. This is incorrect. The chemotactic ground substance is not a finely minced fragment of viable tissue containing its native cells and their extracellular matrix. Rather, chemotactic substances are simply proteins. See Brekke, col. 10, line 17-21. Thus, chemotactic substances that are ground cannot meet the claim recitations because the chemotactic substance is a protein (or a portion thereof), and not a viable tissue that includes its native *cells*. It is clearly impossible to grind a substance that lacks cells to result in fragments of the substance that contain its native cells.

The cells that are seeded onto the scaffold of Brekke are also not finely minced fragments of viable tissue containing its native cells and their extracellular matrix. Rather, the precursor cells are cells separated from their extracellular matrix, and there is no disclosure of mincing anything in Brekke containing native cells and their extracellular matrix. The precursor cells are harvested from tissue by “1) placing the precursor tissue in culture and allowing the *cells to proliferate out of the tissue*, or 2) digesting the tissue with collagenase, thereby *freeing the cells*, which in turn are placed in the culture medium and grown.” Col. 11, lines 42-49 (emphasis added). Brekke discloses *digesting the extracellular matrix* prior to culturing the cells or, in the alternative, culturing the cells *to proliferate the cells out of the tissue’s extracellular matrix*. The suspension of cells thus lacks the cells’ native extracellular matrix. The seeded cells of this embodiment of Brekke are therefore not finely minced fragments of “viable tissue” containing its native cells and their extracellular matrix because the seeded cells are simply cells that have been *removed from their extracellular substance*

and there is nothing that can be considered finely minced tissue fragments containing its native cells and their extracellular matrix. Moreover, Brekke does not disclose mincing anything with cells.

Independent claims 1, 13, 24, and 34 therefore distinguish over Brekke and represent allowable subject matter. Claims 3-6, 9-10, 14-18, 20-21, 25-28, 30-33, 35, 39, and 42-52, which depend from one of independent claims 1, 13, 24, and 34, likewise distinguish over Brekke and represent allowable subject matter.

Patentability of the Claims Over Schwartz

Independent claims 1, 13, 24, and 34 distinguish over Schwartz because Schwartz does not disclose finely minced fragments of viable tissue that are contained within or loaded into a pocket of a scaffold, the finely minced fragments containing cells and their naturally occurring extracellular matrix, and the cells and their naturally occurring extracellular matrix being native to the viable tissue.

As shown in Figure 23, Schwartz discloses a device for regenerating articular cartilage having a base (21) that contains a tissue regeneration material (22). The base (21) is formed of a biocompatible polymer, a bioremodelable collagenous matrix, or a *naturally occurring ECM* (e.g., SIS). See paragraph [0108]. The tissue regeneration material (22) “encompasses *naturally-occurring extracellular matrix* (ECM) materials that provide a *collagen scaffold* for tissue repair and regeneration.” Paragraph [0083] (emphasis added). Schwartz defines “naturally occurring extracellular matrix” at paragraph [0083], as follows:

Thus, in this application, the terms “naturally occurring extracellular matrix” or “naturally occurring ECM” are intended to refer to *extracellular matrix material that has been cleaned, disinfected, sterilized, and optionally cross-linked*. The terms “naturally occurring ECM” and “naturally occurring extracellular matrix” are intended to include foam material made from naturally occurring ECM....”

(Emphasis added). Thus, Schwartz provides a tissue regeneration material (22) that serves as a *collagen scaffold* formed of processed, decellularized *extracellular matrix*.

The tissue regeneration material (22) contained within the base (21) cannot be considered to be finely minced fragments of viable tissue containing its native cells and their naturally occurring

extracellular matrix, because that which is minced and placed within the base (21) is only *extracellular matrix material* that has been cleaned, disinfected, sterilized, and cross-linked. The tissue regeneration material of Schwartz is not finely minced fragments of viable tissue which includes its native cells and their extracellular matrix because the tissue regeneration material only includes comminuted extracellular matrix. Indeed, there is no teaching by Schwartz to mince anything containing its native cells. Thus, Schwartz fails to teach a scaffold having a pocket containing finely minced fragments of viable tissue containing its native cells and their extracellular matrix.


Independent claims 1, 13, 24, and 34 therefore distinguish over Schwartz and represent allowable subject matter. Claims 3-6, 9-10, 14-18, 20-21, 25-28, 30-33, 35, 39, and 42-52, which depend from one of independent claims 1, 13, 24, and 34, likewise distinguish over Schwartz and represent allowable subject matter.

Conclusion

In conclusion, Applicants submit that all claims are now in condition for allowance, and allowance thereof is respectfully requested. The Examiner is encouraged to telephone the undersigned attorney for Applicants if such communication is deemed to expedite prosecution of this application.

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Respectfully submitted,

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